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09/869,956	10/15/2001	Frank Kappe	KAPPE=1	4398

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EXAMINER

KOSLOW, CAROL M

ART UNIT

PAPER NUMBER

1755

DATE MAILED: 03/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/869,956

Applicant(s)

KAPPE ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 2,3,5,7,10-15 and 17-29 is/are rejected.
- 7) ☒ Claim(s) 1,4,6,8,9 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

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References AI and AN, cited in the Information Disclosure Statement of 5 October 2001, were considered with respect to the supplied translations.

References AH, AJ, AK, AL and AM, cited in the Information Disclosure Statement of 5 October 2001, were considered with respect to the supplied English abstracts.

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The disclosure is objected to because of the following informalities:

There is no brief description of the drawings. On page 14, "Bi1" should be "BiI". Finally, the composition of the activator and the composition of the coactivator, as defined in the first two lines of the last paragraph on page 6, are unclear. It is noted that, in the art, the use of "activator" and "coactivator" means there is only one activator and all other ions added to aid in luminescence are called coactivator. Appropriate correction is required.

Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim.

Claim 1 clearly limits the fluxing agent only to fluorides, bromides and iodides with only slightly mineralizing effect. Therefore claim 1 already teaches the fluxing agent does not contain a strongly mineralizing fluxing agent. Accordingly, the subject matter of claim 6 is found in claim 1 and therefore claim 6 does not further limit claim 1.

Claim 1 is objected to because of the following informalities: This claim is not in proper U.S. claim format. Each claim must begin with a capital letter and ends with a period. Periods

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may not be used elsewhere in the claims except for abbreviations. See *Fressola v. Manbeck*, 36 USPQ2d 1211 (D.D.C. 1995). Appropriate correction is required.

Claims 3, 5, 8, 13, 15, 16-20 and 26-29 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim and should refer to other claims in the alternative. See MPEP § 608.01(n).

Claims 3, 5, 7, 10-15, 17, 19-21 and 24-29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

There is no teaching in the specification that the activator or coactivator source can be sodium tetrachloroaurate. Thus claim 5 is not supported by the specification. Page 8 teaches the fluxing agent can contain tervalent cationic components. This teaching does not support claim 7, which teaches the presence of any cationic component. There is no teaching in the specification that the acid in the acid treatment step can be nitric acid, as claimed in claim 10. The subject matter of claims 11 and 12 are not found in the specification. The examples teach treating the phosphor in an acid bath of 37% HCl for one hour or in a 20% citric acid bath for 5 hours. Page 10, paragraphs 3 and 4 set forth the re-doping conditions. These paragraphs teach mixing the activator and/or coactivator compound with the acid treated zinc sulfide and firing the mixture at 300-800°C for 30 minutes to 10 hours. The only firing atmosphere for the re-doping step is taught in the examples. This atmosphere is air. Thus claims 13-15 and 17 where the re-doping conditions are not defined and the claimed de-doping atmosphere is nitrogen or a mixture of nitrogen and 1-10% hydrogen, are not supported by the specification. The examples teach

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washing the re-doped zinc sulfide with a mineral acid and then washing with DI water to pH neutrality. This teaching does not support claim 19, which teaches washing the re-doped zinc sulfide with DI water to pH neutrality and then washing with a mineral acid or a KCN solution. Claim 20 is not supported by the specification since the specification teaches the sixth step must occur after the fifth step. This claim teaches the method according to any one of 1-12, which means the taught step occurs after step four. The specification only teaches annealing in air, thus claim 21 is not supported by the specification. Page 12 teaches the zinc sulfide particles are used in screen printing, intaglio or offset printing. There is no teaching of the claimed screen size in claim 26. Finally, the subject matter of claims 24, 25 and 27-29 are not found in the specification.

Claims 2, 3, 5, 7, 10, 14, 15, 17, 18, 20, 21, 26, 28 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 2 and 10, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Regarding claims 7, 10, 18, the phrase "e.g." renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Regarding claims 2 and 26, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 3 is indefinite since this claim teaches adding the activators to the washed ZnS suspension during the ZnS precipitation step. The washed ZnS is formed from the precipitated ZnS, thus this aspect of the claimed process cannot

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be performed. In addition, claim 1 teaches adding the activators to the zinc sulfide obtained from step 1. Thus the taught first aspect adding the activators during step 1 is excluded by claim 1.

Claim 3 recites the limitation "the washed ZnS suspension". There is insufficient antecedent basis for this limitation in the claim or in claims 1 or 2. There is no teaching in the claims of

washing the zinc sulfide produced by step 1. Claims 5, 14 and 15 are indefinite since the composition of the activator and coactivator are unclear. Claim 17 is indefinite since an

atmosphere consisting of nitrogen and 1-10% hydrogen is not an inert nitrogen atmosphere.

Claims 20 and 21 are improperly dependent on claims 1-12. The specification teaches the sixth step must occur after the fifth step. Claims 28 and 29 are directed to articles comprising the particles of claims 22-25. Thus these claims are improperly dependent on these claims since they are broader in scope than claims 22-25.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23, 26 and 27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by

Hase et al.

Examples 9-14 teach cubic zinc sulfide electroluminophores having an average particle size of 8 or 9 microns. Since the taught particles are identical to those claimed, they must be dispersible in the claimed inks. The reference teaches the claimed electroluminophores.

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Claims 23, 26 and 27 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Marking et al or Mano.

These references teach cubic zinc sulfide electroluminophores. Marking et al teaches particles having an average particle size of about 7-11 microns and examples 1, 2, 5 and 6 in Mano teach particles having an average particle size in the range of about 13-14.9 microns. Since the taught particles are identical to those claimed, they must be dispersible in the claimed inks.

The references teach the claimed electroluminophores.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mano.

This reference teaches cubic zinc sulfide electroluminophores having an average particle size of 20 microns or less. This range overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed particles.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al.

Column 15, lines 13-16 teach the taught phosphor can be subjected to any known surface treatment. Page 13 teaches it is known in the art to apply protective layers, such as those claimed,

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to zinc sulfide particles. Thus one of ordinary skill in the art would have it obvious to apply the claimed known protective layers to the taught zinc sulfide particles. The reference teaches the claimed particles.

Claims 4 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1, 8 and 16 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

Claims 2, 3, 5, 7, 10-15 and 17-21 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112 set forth in this Office action.

The claimed process is not taught or suggested by the cited art of record. There is no teaching of producing a zinc sulfide electroluminescent phosphor containing at least two activators, where one is not a halide, by the claimed method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (703) 308-3817. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (703) 308-3823.

The fax number for Amendments filed under 37 CFR 1.116 or After Final communications is (703) 872-9311. The fax number for all other official communications is (703) 872-9310.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661 or (703) 308-0662.

cmk
March 6, 2003



C. Melissa Koslow
Primary Examiner
Tech. Center 1700